

ION THRUSTER HAVING A HOLLOW CATHODE ASSEMBLY  
WITH AN ENCAPSULATED HEATER, AND ITS FABRICATION

ABSTRACT OF THE DISCLOSURE

5 An ion thruster has a hollow cathode assembly including a heater with an  
inner ceramic sleeve and an outer ceramic sleeve. The outer ceramic sleeve  
overlies the inner ceramic sleeve with a filament volume between the two sleeves.  
A wound filament has windings disposed within the filament volume, and a mass  
of ceramic powder fills the remaining portion of the filament volume between the  
windings of the filament. A cathode is disposed within the inner ceramic sleeve  
10 of the heater. The heater is assembled by preparing the filament and forming it  
into a wound cylinder, and then encapsulating it and the powder between the inner  
and the outer ceramic sleeves. The hollow cathode assembly may serve as a  
portion of a plasma source or as a portion of a charge neutralizer.